REMARKS

The Office Action of June 14, 2007 has been reviewed in detail and this paper is responsive thereto. Claims 12-28 are pending. Claims 12-19 and 22-26 stand rejected. Claims 20-21 and 27-28 are objected to. No new matter has been introduced into the application. As explained in more detail below, Applicants respectfully submit that all remaining pending claims are in condition for allowance.

Allowable Subject Matter

Claims 20, 21, 27 and 28 are objected to by the Examiner as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicants would like to thank the Examiner for indicating the allowable subject matter. Applicants respectfully submit that the pending claims are allowable for at least the reasons described below.

Claim Rejections Under 35 USC §103

Claims 12-15, 18 and 22-25 are rejected under 35 USC §103(a) as being anticipated by Ohsuge, et al., U.S. Patent No. 6,768,729 ("Ohsuge") in view of Persson, et al., U.S. Patent No. 6,587,500 ("Persson"). Applicants respectfully traverse the rejections.

Ohsuge relates to signal power distribution. In particular, Ohsuge discloses signal power distribution data in a "delay profile" used to analyze signal paths required to operate a rake receiver reception section. The "delay profile" contains signal power distribution with respect to delay times of the reception signals.

Persson relates to a time synchronization methodology applicable with hard decision receivers such as Bluetooth receivers. A correlator is used to determine the phase of symbols. The preferred embodiment of Persson illustrates the time synchronization in terms of establishing and comparing four phase samplings. Timing synchronization is accomplished by oversampling the demodulator output four times, i.e., f=1/T=4/T, where f is the sampling frequency and T is the sampling time. Subsequently, the oversampled binary sequence is correlated with a known access code which precedes the actual data. Generally, the known

access code is also a binary sequence. For hard decision type receivers, there is potentially more than one phase that results in maximum correlation. Additional details of the sample selection process are described below (cf. col. 2, lines 7 to 25).

The oversampled binary sequence is stored in a shift register. For each phase sample, the content of the shift register is shifted one step to the right. Thus, the shift register contains four sampling sequences of the received bit stream. An additional register contains the known sequence with which the four sampling sequences are correlated. A correlation value or correlator output is determined by the correlator for each sample and compared with a threshold value by means of a threshold comparator. The threshold comparator can be part of the correlator or a separate process or device. In a straight-forward implementation, the correlator output exceeds a predetermined threshold value, the timing is assumed to be correct and the phase of the sample values that caused the correlator trigger is used as a reference for the sampling time of the remaining part of the packet (cf. Fig. 2) (cf. col. 2, lines 26 to 42).

In the preferred embodiment of Persson, each channel symbol is sampled four times. Each of the generated sampling sequences is correlated with a reference sequence to generate a respective correlation value for each of the sampling sequences (cf. step 206 of Fig. 6). The respective correlation values are compared with the threshold value y to generate respective threshold comparator values or trigger output values x (cf. step 208 of Fig. 6). For the preferred embodiment, the trigger output values X_k are binary values. The threshold value y_k can be updated prior to each successive comparison with a subsequent correlation value. More specifically, if a current correlation value X_k exceeds the threshold value y_k, the threshold value y_{k+1} is updated to the value of the current correlation value s_k, and the subsequent correlation value is compared to the updated threshold value y_{k+1}. Also, if a phase decision is made, the threshold value is set to a predefined value. Otherwise, the threshold value remains unchanged for the subsequent comparison. At step 210, a phase decision is made based on a trigger output state X_k. The trigger output state X_k is compared with a predetermined set of decision rules (cf. Fig. 5) to select a sampling phase that agrees with the trigger output state X_k and the determined set of decision rules (cf. col. 5, lines 32 to 61).

Independent claim 12 includes the claimed feature of "restarting data extraction from the bit stream when the new correlation value exceeds the stored maximum correlation value."

Similarly, independent claims 18 and 24 include the claimed feature of "starting or restarting data extraction from the bit stream when the correlation value exceeds a threshold value or a stored maximum correlation value . . . ." Applicants respectfully submit that Ohsuge does not disclose at least these claimed features. For example, Ohsuge teaches a determination of several local maxima corresponding to a multipath situation experienced at the position of the rake receiver of Oshuge. The delay timing information relating to the local maxima is utilized to configure the several, independent rake receiver sections of Oshuge. Each of the rake receiver sections operates in accordance with the respectively configured delay timing. Therefore, Ohsuge does not disclose the claimed feature of "restarting data extraction from the bit stream when the new correlation value exceeds the stored maximum correlation value" and "starting or restarting data extraction from the bit stream when the correlation value exceeds a threshold value or a stored maximum correlation value . . . ." Furthermore, Persson does not make up for the deficiencies in Ohsuge. Therefore, for at least this reason Applicants respectfully submit that independent claims 12, 18, and 24 are in condition for allowance. Dependent claims 13-17, 19-23, and 25-28 which ultimately depend from one of independent claims 12, 18, and 24 are allowable for at least the same reason as the independent claim from which they ultimately depend.

Moreover, independent claims 12, 18, and 24 are allowable for at least the following additional reasons. Independent claim 12 includes the claimed feature of "continuing comparing the bit stream with the expected bit sequence to determine a new correlation value." Furthermore, independent claims 12, 18, and 24 include the claimed feature of "storing the correlation value that exceeds the threshold value as a maximum correlation value for use as a new threshold value." With respect to these claimed features the Office Action states and Applicants agree:

> Ohsuge . . . failed to teach storing the correlation value that exceeds a threshold value as a maximum correlation value for use as a new threshold value; and continuing comparing there received bit stream with the expected bit sequence to determine a new correlation value.
>
> (Office Action, page 3)

However, Applicants respectfully disagree that these claimed feature are found in Persson. As stated above, Persson relates to a timing synchronization methodology. Such a

corresponding component, called timing estimator 21, is also described in the present application but operates differently to that described by Persson.

The present application describes the timing estimator 21 in at least paragraphs [0073] to [0077]:

> [0073] The task of the timing estimator 21 is to set the sample time for the sample-and-hold circuit 22. After initialization the timing estimator 21 continuously corrects the sampling time. Main reason for the continued correction is to compensate for initial timing errors after synchronization. A second reason is to compensate for deviations between the transmitter and receiver bit clock.
>
> [0074] The timing estimation is done with an edge detection procedure. That means that the edges of the oversampled data signal from symbol slicing are used to estimate the symbol timing. As the received and filtered symbols are symmetric the so called golden samples are found in the center of each symbol. Due to the symmetry of the symbols the edges are always positioned in the center between two symbols. Consequently the edges occur with a fixed phase of half a symbol relative to the golden samples.

The time synchronization of Persson and the timing estimator 21 of the present application are provided to consider the same issue, namely as disclosed in the last to sentences of paragraph [0073] of the present application:

> Main reason for the continued correction is to compensate for initial timing errors after synchronization. A second reason is to compensate for deviations between the transmitter and receiver bit clock.

And at col. 1 lines 40 to 45 and 63 to 66:

> Baseband processing performance for each module in a Bluetooth system depends on how well a receiver can attain an accurate timing synchronization with the transmitter of the information sequence. An inferior timing synchronization will severely degrade the bit error rate (BER) performance of a receiver within a Bluetooth system.
>
> [...] the result would be a decreased tolerance to noise and timing shifts between transmitter and receiver.

The claimed subject matter relates to the data packet determination and extraction, which is upstream-connected to the timing estimator 21. The timing estimator 21 and its operation form an element of the present invention. Hence, a skilled person in the art would not refer to

Persson as it does not teach or suggest Applicants' claimed features. In particular, Persson merely teaches:

> a sampling unit collects a number of samples per channel symbol of an input signal to generate a number of sampling streams, and a correlator computes a correlation value of each of the number of sampling streams [also designated as sampling sequences cf. col. 5, lines 32 to bl of Persson] with a predetermined bit sequence.

Therefore, for at least this reason Applicants respectfully submit that independent claims 12, 18, and 24 are in condition for allowance. Dependent claims 13-17 19-23, and 25-28 which ultimately depend from one of independent claims 12, 18, and 24 are allowable for at least the same reason as independent claim from which they depend.

Moreover, dependent claim 15 is allowable for at least an additional reason. Dependent claim 15 includes the claimed feature of "wherein data extracted prior to restarting data extraction is rejected." The Office Action refers to col. 3, lines 21 to 25 of Persson and states:

> (since Persson teaches updating threshold value to reduce the probability of false alarm (Col 3, L21-25), it is obvious that the data extracted from the previous threshold (i.e. false alarm) should be rejected so as to improve quality. (official notice is taken here).

Applicants respectfully submit that the cited section of Persson does not disclose the claimed feature of "wherein data extracted prior to restarting data extraction is rejected." Applicants respectfully submit that the Office Action has misunderstood the teaching of Persson. Applicants submit that the updating of the threshold value in Persson is done to avoid any rejection of extracted data. Therefore, Applicants respectfully submit that dependent claim 15 is in condition for allowance.

Furthermore, dependent claims 17, 20, and 27 include the claimed feature of an oversampled bit stream. The present application also suggests oversampling the received, demodulated signal. By contrary, a number of sampling streams or sampling sequences, each of which is correlated with a predetermined bit sequence is neither described nor required in the present application. Therefore, dependent claims 17, 20, and 27 are allowable over the cited documents.

Applicants therefore respectfully request reconsideration of the pending claims and a finding of their allowability. A notice to this effect is respectfully requested. Please feel free to contact the undersigned should any questions arise with respect to this case that may be addressed by telephone.

Respectfully submitted,

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